IN THE CLAIMS

1. (Original) A system for correcting errors in train movement information caused by wear of a wheel of a train, the system comprising:

a control unit;

a memory connected to the control unit;

a positioning system in communication with the control unit, the positioning system being configured to provide the control unit with position information pertaining to the train; and

a wheel sensor connected to the control unit, the wheel sensor being configured to measure rotation of a train wheel;

wherein the control unit is configured to perform the steps of

determining a distance traveled by the train over an interval by calculating a difference in positions reported by the positioning system at the start of the interval and the end of the interval;

obtaining wheel rotation information from the wheel sensor over the interval;

determining a new size of the wheel based on the distance traveled and wheel rotation information;

calculating a correction factor based on the new wheel size and a nominal wheel size; and

correcting train movement information indicated by the wheel sensor using the correction factor.

2. (Original) The system of Claim 1, wherein the train movement information corrected in the correcting step is distance.

3. (Original) The system of Claim 1, wherein the train movement information corrected in the correcting step is speed.

4. (Original) The system of Claim 1, wherein the distance traveled is determined using a start position and a stop position from the positioning system.

5. (Original) The system of Claim 1, wherein the rotation information includes a number of rotations of the wheel over the distance.

6. (Original) The system of Claim 1, wherein the control unit is further configured to ignore wheel rotation data and distance data when a speed of the train is below a speed threshold.

7. (Original) The system of Claim 1, further comprising a map database connected to the control unit, wherein the control unit is further configured to perform the steps of using position information from the positioning system as an index to the map database to determine a curvature of an upcoming section of track over which wheel rotation information is to be collected and ignoring wheel rotation data if the curvature is above a curvature threshold.

8. (Original) The system of Claim 1, further comprising a map database connected to the control unit, wherein the control unit is further configured to perform the steps of using position information from the positioning system as an index to determine a grade of an upcoming section of track over which wheel rotation information is to be collected and ignoring wheel rotation data corresponding to portions of track having a grade above a grade threshold.

9. (Original) The system of Claim 1, wherein the control unit is further configured to correct wheel rotation data corresponding to portions of track having a curvature over a curvature threshold.

10. (Original) The system of Claim 1, wherein the control unit is further configured to monitor an acceleration of the wheel and ignore any rotation information corresponding to an acceleration above a predetermined threshold.

11. (Original) The system of Claim 1, in which the wheel sensor is configured to measure a rotation of the wheel directly.

12. (Original) The system of Claim 1, in which the wheel sensor is configured to measure a rotation of an axle to which the wheel is connected.

13. (Original) The system of Claim 1, in which the wheel sensor is configured to measure a rotation of a driveshaft which provides a motive force to the wheel.

14. (Original) The system of Claim 1, in which the wheel sensor is configured to measure a rotation of a gear forming part of a drive system for a wheel.

15. (Original) The system of Claim 1, in which the wheel sensor is configured to measure a rotation of a motor connected to drive the wheel.

16. (Original) The system of Claim 1, wherein the steps of determining a distance traveled by the train and obtaining wheel rotation information from the wheel sensor are repeated for a plurality of intervals, and the correction factor is calculated based on distance traveled and wheel rotation information for all of the intervals.

17. (Original) A method for correcting errors in train movement information caused by wear of a wheel of a train comprising the steps of:

determining a distance traveled by the train over an interval by calculating a difference in positions reported by a positioning system located on the train at the start of the interval and the end of the interval;

obtaining wheel rotation information from the wheel sensor over the interval;

determining a new size of the wheel based on the distance traveled and wheel rotation information;

calculating a correction factor based on the new wheel size and a nominal wheel size; and

correcting train movement information indicated by the wheel sensor using the correction factor.

18. (Original) The method of Claim 17, wherein the train movement information corrected in the correcting step is distance.

19. (Original) The method of Claim 17, wherein the train movement information corrected in the correcting step is speed.

20. (Original) The method of Claim 17, wherein the distance traveled is determined using a start position and a stop position from the positioning system.

21. (Original) The method of Claim 17, wherein the rotation information includes a number of rotations of the wheel over the interval.

22. (Original) The method of Claim 17, wherein wheel rotation data and distance data is ignored when a speed of the train is below a speed threshold.

23. (Original) The method of Claim 17, further comprising the steps of using position information from the positioning system as an index to a database to determine a curvature of an upcoming section of track over which wheel rotation information is to be collected and ignoring wheel rotation data if the curvature is above a curvature threshold.

24. (Original) The method of Claim 17, further comprising the steps of using position information from the positioning system as an index to a database determine a grade of an upcoming section of track over which wheel rotation information is to be collected and ignoring wheel rotation data corresponding to portions of track having a grade above a grade threshold.

25. (Original) The method of Claim 17, further comprising the step of correcting wheel rotation information corresponding to portions of track having a curvature over a curvature threshold.

26. (Original) The method of Claim 17, further comprising the steps of monitoring an acceleration of the wheel and ignoring any wheel rotation information corresponding to an acceleration above a predetermined threshold.

27. (Original) The method of Claim 17, in which the wheel rotation information is measured directly.

28. (Original) The method of Claim 17, in which the wheel rotation information is measured by measuring a rotation of an axle to which the wheel is connected.

29. (Original) The method of Claim 17, in which the wheel rotation information is measured by measuring a rotation of a driveshaft which provides a motive force to the wheel.

30. (Original) The method of Claim 17, in which the wheel rotation information is measured by measuring a rotation of a gear forming part of a drive system for a wheel.

31. (Original) The method of Claim 17, in which the wheel rotation information is measured by measuring a rotation of a motor connected to drive the wheel.

32. (Original) The method of Claim 17, wherein the steps of determining a distance traveled by the train and obtaining wheel rotation information from the wheel sensor are repeated for a plurality of intervals, and the correction factor is calculated based on distance traveled and wheel rotation information for all of the intervals.

33. (Original) The method of Claim 17, wherein the correction factor is calculated by forming a ratio of the nominal wheel size and the new wheel size.

34. (Currently Amended) A system for correcting errors in train movement information caused by wear of a wheel of a train, the system comprising:

a control unit;

a memory connected to the control unit;

a positioning system in communication with the control unit, the positioning system being configured to provide the control unit with position information pertaining to the train; and

a wheel sensor connected to the control unit, the wheel sensor being configured to measure rotation of a train wheel and provide train movement information based on a nominal wheel size;

wherein the control unit is configured to perform the steps of

determining a positioning system distance traveled by the train over an interval by calculating a difference in positions reported by the positioning system at the start of the interval and the end of the interval;

determining a wheel sensor distance traveled by the train over the interval based on the train movement information from the wheel sensor;

calculating a correction factor based on the positioning system distance and the wheel sensor distance; and

using the correction factor to correct train movement information indicated by the wheel sensor;

wherein the control unit is further configured to ignore wheel rotation distance and positioning system distance when a speed of the train is below a speed threshold.

35. (Original) The system of Claim 34, wherein the train movement information corrected in the correcting step is distance.

36. (Original) The system of Claim 34, wherein the train movement information corrected in the correcting step is speed.

37. (Original) The system of Claim 34, wherein the distance traveled is determined using a start position and a stop position from the positioning system.

38. (Original) The system of Claim 34, wherein the rotation information includes a number of rotations of the wheel over the interval.

39. (Canceled)

40. (Original) The system of Claim 34, further comprising a map database connected to the control unit, wherein the control unit is further configured to perform the steps of using position information from the positioning system as an index to the map database to determine a curvature of an upcoming section of track, and ignoring wheel sensor distance and positioning system distance for sections of track for which the curvature is above a curvature threshold.

41. (Original) The system of Claim 34, further comprising a map database connected to the control unit, wherein the control unit is further configured to perform the steps of using position information from the positioning system as an index to the map database to determine a grade of an upcoming section of track, and ignoring wheel sensor distance and positioning system distance corresponding to portions of track having a grade above a grade threshold.

42. (Original) The system of Claim 34, wherein the control unit is further configured to correct wheel sensor distance corresponding to portions of track having a curvature over a curvature threshold.

43. (Original) The system of Claim 34, wherein the control unit is further configured to monitor an acceleration of the wheel and ignore any wheel sensor distances and positioning system distances corresponding to an acceleration above a predetermined threshold.

44. (Original) The system of Claim 34, in which the wheel sensor is configured to measure a rotation of the wheel directly.

45. (Original) The system of Claim 34, in which the wheel sensor is configured to measure a rotation of an axle to which the wheel is connected.

46. (Original) The system of Claim 34, in which the wheel sensor is configured to measure a rotation of a driveshaft which provides a motive force to the wheel.

47. (Original) The system of Claim 34, in which the wheel sensor is configured to measure a rotation of a gear forming part of a drive system for a wheel.

48. (Original) The system of Claim 34, in which the wheel sensor is configured to measure a rotation of a motor connected to drive the wheel.

49. (Original) The system of Claim 34, wherein the steps of determining a positioning system distance and determining a wheel sensor distance are repeated for a plurality of intervals, and the correction factor is calculated based on the positioning system distance traveled and the wheel sensor distance for all of the intervals.

50. (Currently Amended) A method for correcting errors in train movement information caused by wear of a wheel of a train comprising the steps of:

determining a positioning system distance traveled by the train over an interval by calculating a difference in positions reported by a positioning system located on the train at the start of the interval and the end of the interval;

determining a wheel sensor distance traveled by the train over the interval based on the train movement information from the wheel sensor;

calculating a correction factor based on the positioning system distance and the wheel sensor distance; and

correcting train movement information indicated by the wheel sensor using the correction factor;

wherein the wheel sensor distance and the positioning system distance is ignored when a speed of the train is below a speed threshold.

51. (Original) The method of Claim 50, wherein the train movement information corrected in the correcting step is distance.

52. (Original) The method of Claim 50, wherein the train movement information corrected in the correcting step is speed.

53. (Original) The method of Claim 50, wherein the distance traveled is determined using a start position and a stop position from the positioning system.

54. (Original) The method of Claim 50, wherein the rotation information includes a number of rotations of the wheel over the interval.

55. (Canceled)

56. (Original) The method of Claim 50, further comprising the steps of using position information from the positioning system as an index to a database to determine a curvature of an upcoming section of track, and ignoring wheel sensor distance and positioning system distance for sections of track for which the curvature is above a curvature threshold.

57. (Original) The method of Claim 50, further comprising the steps of using position information from the positioning system as an index to a database determine a grade of an upcoming section of track, and ignoring wheel sensor distance and positioning system distance corresponding to portions of track having a grade above a grade threshold.

58. (Original) The method of Claim 50, further comprising the step of correcting wheel sensor distances corresponding to portions of track having a curvature over a curvature threshold.

59. (Original) The method of Claim 50, further comprising the steps of monitoring an acceleration of the wheel and ignoring any wheel sensor distances and position system distances corresponding to an acceleration above a predetermined threshold.

60. (Original) The method of Claim 50, in which the wheel sensor is configured to measure a rotation of the wheel directly.

61. (Original) The method of Claim 50, in which the wheel sensor is configured to measure a rotation of an axle to which the wheel is connected.

62. (Original) The method of Claim 50, in which the wheel sensor is configured to measure a rotation of a driveshaft which provides a motive force to the wheel.

63. (Original) The method of Claim 50, in which the wheel sensor is configured to measure a rotation of a gear forming part of a drive system for a wheel.

64. (Original) The method of Claim 50, in which the wheel sensor is configured to measure a rotation of a motor connected to drive the wheel.

65. (Original) The method of Claim 50, wherein the steps of determining a positioning system distance and determining a wheel sensor distance are repeated for a plurality of intervals, and the correction factor is calculated based on the positioning system distance traveled and the wheel sensor distance for all of the intervals.